

In embodiments using frequency repetition, the transmitter preferably masks the frequency-domain signal to reduce the peak-to-average ratio (PAR) in the time-domain. The receiver removes the mask imposed by the transmitter. If, as in the example above, the mask used by the transmitter consists of +/- 1s, then the mask is removed by changing 5 the signs of the FFT outputs in the receiver. After the mask is removed, the data is deinterleaved according to the interleaving pattern at the transmitter.

The repeated signal is combined in the frequency domain at the receiver to increase the SNR of the repeated signal over the SNR had the signal not been repeated. The SNR is increased by multiplying the complex conjugate of the channel response as 10 follows.

$$Y_c = \sum_{j \in S_c} H_j^* Y_j$$
$$H_c = \sum_{j \in S_c} |H_j|^2$$

where Y_j is the signal in subchannel j , H_j is the response of subchannel j , Y_c is the combined signal, H_c is the combined channel, and S_c is the set of indices corresponding to the frequency subchannels that contain the same data.

15 The channel effect is preferably removed before the data is input to the Viterbi decoder so that the Viterbi decoder is able to use the same soft decision unit regardless of the actual channel response. In the extended-range mode, the combined channel is used in the channel correction unit.